

**Central Pacific Transcontinental Railroad, Tunnel 18
(Newcastle Tunnel)
Southern Pacific Donner Pass Route Tunnels
Milepost 120.5
Newcastle
Placer County
California**

HAER No. CA-197

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PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

**Historic American Engineering Record
National Park Service
Western Region
Department of the Interior
San Francisco, CA 94107**

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HISTORIC AMERICAN ENGINEERING RECORD

CENTRAL PACIFIC TRANSCONTINENTAL RAILROAD, TUNNEL 18 (Newcastle Tunnel)

HAER No. CA-197

Location: Southern Pacific Donner Pass Route Tunnels
Milepost 120.5, Newcastle vicinity, Placer County, California

UTM: 10-662460-4304470
Quad: Gold Hill, Calif. 7.5', 1954 (photorevised 1973)
(west portal)

UTM: 10-662790-4304500
Quad: Auburn, Calif., 7.5', 1953 (photorevised 1981)
(east portal)

Date of Construction: 1909.

Engineer: Southern Pacific Railroad Engineering Department

Present Owner: Union Pacific Railroad, 1416 Dodge Street, Omaha NE.

Present Use: Railroad Tunnel.

Significance: The Central Pacific First Transcontinental Railroad is a segment of the western half of the first transcontinental railroad, built from Sacramento, California to Promontory Summit, Utah between 1863 and 1869, where it joined the Union Pacific Railroad which had built west from Omaha. For the purpose of the current project, the first transcontinental railroad was found likely to be eligible for the National Register of Historic Places at the national level of significance under Criterion A for its significance in transportation history, in uniting the East and the West, and in the development of the West. The railroad's period of significance is 1869 to 1945, from the line's completion in 1869, through the years of its role in the settlement and development of the West, to the conclusion of the railroad's achievements in World War II. Built in 1909, Tunnel 18 is a contributive element of this property.

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I. DESCRIPTION

Tunnel 18 is a 991-foot, double track railroad tunnel, with granite ashlar portal faces and wingwalls. As-built, the tunnel was concrete-lined for the first fifty feet in from each portal, with the remainder lined in redwood timber; the railroad has subsequently covered the timbering with shotcrete. The tunnel is on a tangent (no curves) alignment, and carries the tracks of the Union Pacific Railroad's (formerly Southern Pacific, and originally Central Pacific) Donner Pass line.

II. HISTORICAL INFORMATION

Contractors, Erickson & Petterson of San Francisco built Tunnel 18 (originally numbered Tunnel 4) in 1909 as an element of the reconstruction and double-tracking of the original Central Pacific line between Rocklin and Colfax. [For a full history of this line and of this undertaking, see the documentation set for the Central Pacific Transcontinental Railroad (Southern Pacific Overland Route) (Southern Pacific Donner Pass Route), Southern Pacific Donner Pass Route Tunnels, HAER No. CA-196.] After assuming control of the Southern Pacific/Central Pacific and merging them with the Union Pacific in 1901, Edward H. Harriman had embarked on a series of huge reconstruction projects system-wide. One of these was the double-tracking of the original Central Pacific line over Donner Pass, the first segment of which was from Rocklin to Colfax. In connection with this, Harriman also moved the roundhouse and locomotive shop facilities originally built at Rocklin by the Central Pacific, to nearby Roseville where he built a much larger and more modern facility to handle the larger locomotives he was bringing onto the system.

Two contracting firms divided the work, with Erickson & Petterson handling the work from Rocklin east to Clipper Gap, and Utah Construction Company of Ogden building the portion from Colfax west to Clipper Gap. Tunnel 18 was the only double-track tunnel on the entire project; all the tunnels, whether single- or double-track, conformed to Southern Pacific Common Standard plans.

Erickson & Petterson built their tunnels by driving a drift (a small pilot tunnel) at the spring line of the final arch, and centered. From this they widened the arch to full section down to the spring line. They then drove one or two drifts at grade line and, using black powder, blasted the remaining bench directly down into dump cars in the drifts. Because the geology at the site of Tunnel 18 consisted of clay shale with some hard granite boulders, the contractors chose to use an air shovel. The width of the double-track tunnel also required the use of curved I-beams as temporary support while the construction crews installed the final timbering.

As was the case for much of this double-tracking project, the proximity of the existing Central Pacific line to the new line complicated construction operations. At Tunnel 18, the original line had skirted the north slope of the hill being pierced, on a slightly higher alignment. As construction progressed on the new line, crews had to work around trains to install temporary crossings. On the east end of the tunnel, crews built a temporary timber pile trestle under the active line to carry it across the new grade. This work proved extremely difficult, as it required 45 minutes to drive each pile, inclusive of moving the pile drive from its spur track onto the mainline, driving the pile, and moving the pile driver back to the spur. Often there was insufficient time between trains on the busy mainline, so the work dragged on for some time before completion. Then grading crews used horse-drawn scrapers to build 2,500 feet of fill,

seventy feet high and containing 250,000 cubic yards of material to carry the second track. West of the tunnel, their problem similar, with a 65-foot-high double-track fill 1,000 feet long and containing 112,000 cubic yards stretching between the tunnel and Newcastle Station to the west. Here, however, crews were able to use material from the existing fill to build the new one.

III. SOURCES

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IV. PROJECT INFORMATION

As a result of the 1996 merger of the Union Pacific and Southern Pacific Railroads, a federal undertaking under the jurisdiction of the Surface Transportation Board of the U.S. Department of Transportation, and in order to accommodate freight trains utilizing longer and taller cars and loads--tri-level auto rack cars and cars carrying double-stacked containers, the Union Pacific will need to increase tunnel clearances on the former Southern Pacific Donner Pass Route. The tunnels, built between 1868 and 1925, are contributing elements of the National Register-eligible Southern Pacific Donner Pass Route Tunnels Historic District. All tunnels have been laser-measured and the railroad will determine clearance needs on a tunnel-by-tunnel basis. Some, because of curved alignment, will require interior work to allow for longer cars such as tri-level auto rack cars; others, Tunnel 18 among them, will require both interior and portal work to provide sufficient vertical clearance for "double-stack" container cars. The latter work may impact the character-defining tunnel portals if crown mining of the tunnels (as opposed to lowering the tunnel floors) is selected. Inasmuch as this would cause an adverse effect to the tunnels, Union Pacific has elected to record the tunnels for the Historic American Engineering Record. Documentation was carried out by P.S. Preservation Services, John Snyder Field Director and Historian, and Ed Andersen, Photographer. Photos were made in August 1997, and research was carried out from August 1997 through March 1998.